

## 8611 Smart Router

*Fully Redundant, Scalable Network Element for LTE and IP/Ethernet RAN Access Aggregation*

The Coriant® 8611 Smart Router is a compact and highly modular next generation access element. The device offers high data delivery capacity in LTE, 4G, and 3G networks. With a switching capacity of up to 7.5 Gbps and 5.5 Gbps with Simple IMIX packet size distribution, the 8611 Smart Router is cost-efficient, powerful, and easy to scale. Offering 7 slots for physical interface modules, the 8611 Smart Router is ideal for service providers' large cell sites or small hub aggregation sites in areas where there is demand for high capacity aggregation. The interface and power feed modularity improves various site configurations and also optimizes cost and maintenance of inventory management. The fully redundant Switching and Control Module (SCM) enables unsurpassed carrier-class reliability.

### OFFERING COMPACT FORM FACTOR WITH A FLEXIBLE ARCHITECTURE

The 8611 Smart Router has a packet-based forwarding architecture with Quality of Service (QoS) awareness enabling network optimization for voice and data services in LTE and 3G networks. The advanced QoS features provide the differentiation of premium and best effort data services for real-time voice and video services. The environmentally hardened 8611 Smart Router has a compact 2RU form factor with hot swappable power units and fan modules that are simple to replace. The modular router architecture can be easily changed by the user and includes Gigabit Ethernet, Fast Ethernet, 10G Ethernet, and E1/T1 Line Modules.

### SUPPORTING ROBUST SYNCHRONIZATION

The 8611 Smart Router supports a high quality Oven Controlled Crystal Oscillator (OCXO), which provides excellent temperature stability for IEEE 1588v2 and adaptive timing recovery. The OCXO also offers a highly stable node clock holdover. In addition to adaptive timing and IEEE 1588v2 clock recovery mechanisms, node timing can be obtained from a BITS or GPS source, any PDH, SONET/SDH interface, or any of the synchronous Ethernet interfaces.

### ENABLING QUALITY OF SERVICE TESTING IN PACKET NETWORKS

With support for an extensive set of OAM capabilities, the 8611 Smart Router ensures network availability and maintains QoS requirements for voice, video, and data services. The 8611 Smart Router supports LSP Ping, LSP Traceroute, and Ethernet OAM functions from IEEE 802.1ag and Y.1731. In addition, the 8611 Smart Router along with the Coriant® Smart Router product portfolio and Coriant® 8000 Intelligent Network Manager (INM) support a unique Packet Loop Test tool that enables the testing of QoS parameters including delay, jitter, throughput, and connectivity.

### BENEFITS OF THE CORIANT® 8611 SMART ROUTER

- **Manage traffic aggregation** for large cell sites or small hub aggregation sites
- **Provide switching and routing capacity of up to 7.5 Gbps**
- **Enable flexible LTE network architectures**
- **Reduce operational expenses** with intelligent network management
- **Deploy a range of synchronization options**
- **Deliver carrier-class reliability** with fully redundant switching and control
- **Support QoS requirements** for voice, video, and data services



## The Coriant® Smart Router Series

The Smart Router series offers versatile and scalable solutions for mobile backhaul from small aggregation sites to controller and gateway sites. In addition, Smart Routers serve fixed and mobile convergence and cloud computing networking needs. These solutions are designed to meet the ever-growing requirements of data hungry mobile and enterprise users. All of the Smart Routers are LTE-ready and provide an extensive Ethernet and IP/MPLS feature set. Simultaneous support for multiservice applications in access and aggregation networks protects earlier network investments. The Smart Router product family is supported by the 8000 INM, which is an easy to use end-to-end network management solution. The 8000 INM minimizes operational and maintenance costs and scales up to tens of thousands of network elements.

## IMPLEMENTING AN OPEN, PROGRAMMABLE, AUTOMATED SDN SOLUTION

The 8611 Smart Router is fully supported by the Coriant Transcend™ SDN Packet Controller. The Packet Controller is an integral component of the overall Coriant Transcend™ SDN Solution suite, a modular SDN software suite that combines the benefits of open, programmable, and automated multi-layer (Layer 0-3) SDN architecture and a proven portfolio of IP/MPLS edge routing and packet optical transport solutions to enable dynamic, end-to-end network control.

## TECHNICAL SPECIFICATIONS

### Physical Dimensions

- 441 x 88 x 300 mm / 17.36 x 3.46 x 11.81 in (W x H x D)
- Standard 19-inch, 23-inch, or ETSI 600 mm rack mounting
- 4.6 kg / 10.1 lb without fan, power, and line modules
- 2RU high

### Power and Cooling

- Power feed options
  - User-changeable dual feed wide range (-48 Vdc to +24 Vdc) power module (one per element)
  - Hot swappable single feed -48 Vdc power module (up to 2 per element)
- Power consumption: typical 100 W, maximum 160 W
- Hot swappable air filter and fan module

### Forwarding Plane

- IPv4 routing
- MPLS switching (LSR and LER)
- Ethernet MAC switching

### Functionality

- IP VPN (RFC 4364)
- Ethernet/VLAN, SAToP, CESoPSN, ATM, and HDLC pseudowires
- Single and multi-segment pseudowires
- 802.1ad QinQ
- MPLS-TP Bidirectional LSP
- MPLS-TP 1:1 Linear Protection

- MPLS-TP OAM
- TDM cross connection
- ATM VP/VC switching
- ATM cell concatenation
- ATM IMA
- MC / M-LPPP, PPPmux
- Y.1731 frame loss, frame delay, and frame delay variation measurement
- IEEE 802.1ag Ethernet OAM loopback, continuity check, ping, and link trace
- BFD (Static routes, OSPF, ISIS, RSVP-TE)

### Forwarding Capacity

- Up to 7.5 Gbps, 5.5 Gbps with Simple IMIX

### Chassis Configuration

- Two slots for hot swappable Switching and Control Modules (SCMs)
- Two slots for power feed modules
- Four slots for user changeable Line Modules (LMs)
- Three slots for hot swappable High-speed Modules (HMs)
- Management port on SCM
- External Alarm interface on SCM
- Station Clock Input (SCI) on SCM
- Station Clock Output (SCO) on SCM

### Line Modules (LM)

- 8 x chE1/chT1 LM
- 8 x 10/100BASE-TX LM

### High-speed Modules (HM)

- 4 x Gigabit Ethernet 10/100/1000BASE-TX HM
- 4 x Gigabit Ethernet 100/1000BASE-X HM
- 1 x 10 Gigabit Ethernet HM

### Resiliency and Load Balancing

- Switch fabric protection
- Control plane protection
- Duplicated Synchronization ports
- Duplicated Management Ethernet and CLI ports
- Ethernet Link Aggregation
- 1:1 RSVP-TE LSP protection
- Fast Reroute (FRR)
- Pseudowire redundancy (Ethernet, ATM, TDM)
- IP load balancing (Equal Cost Multipath [ECMP])
- IPv4 and IP VPN load balancing to RSVP-TE tunnels

### Security

- L3/L4 Access Control Lists
- Denial of service protection
- Radius and TACACS+ authentication and accounting
- SSH-2 for FTP and Telnet
- MD5, SHA-1 authentication

## TECHNICAL SPECIFICATIONS

### Synchronization

- ITU-T [G.813] option 1
- ITU-T [G.8262]
- Telcordia [GR-1244] Stratum-3
- Station Clock Input and Output ports
- E1/T1 line synchronization
- Synchronous Ethernet
- SSM over Ethernet [G.8264]
- Adaptive synchronization from SAToP and CESoPSN pseudowires
- IEEE 1588v2 Slave Clock for frequency sync

### IPv4 Routing and MPLS Label

#### Distribution Protocols

- OSPF-TE, ISIS-TE, BGP, and MP-BGP
- LDP, RSVP-TE

#### Traffic Management

- DiffServ support for up to 7 traffic classes, 7 queues per interface
- DiffServ aware MPLS Traffic Engineering (DS-TE)
- IEEE 802.1P/Q mapping to IP or MPLS
- Policing and shaping

- Port, VLAN group, and VLAN shaping
- RED/WRED queue management
- Access Control Lists (ACL)
- ATM service categories: CBR, rt-VBR, nrt-VBR, UBR+, UBR

#### Management

- CLI with SSH2, FTP with SSH2
- SNMPv1 and SNMPv2 monitoring
- Coriant® 8000 Intelligent Network Manager (INM)
- Coriant Transcend™ SDN Packet Controller
- Smart Router autoconfiguration based on DHCP client
- RADIUS and TACACS+ authentication and accounting

#### Standards

- Safety: EN 60950-1:2006 and IEC60950-1:2005
- EMC:
  - EN 300 386:2008
  - FCC 47 CFR Part 15, Subpart B, Class A
- RTTE Directive 1999/5/EC

### Environmental Conditions

- Storage: ETSI EN 300 019-1-1, Class 1.1
  - Temperature: -5°C to 45°C / 23°F to 113°F
- Transportation: ETSI EN 300 019-1-2 Class 2.3
  - Temperature: -40°C to 70°C / -40°F to 158°F
- Operating conditions: ETSI EN 300 019-1-3, Class 3.2 (non-condensing)
  - Temperature: -40°C to 65°C / -40°F to 149°F
- Relative humidity: 5% to 95%
- Minimum cold boot-up temperature: -20°C / -4°F

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